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Results of complex parasitological investigations on small mammals in the Čergov Mountains (Western Carpathians, Czechoslovakia)*

By

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The paper is dedicated to the memory of Tibor WEISZ (1914—1983).

ABSTRACT. In the course of parasitological investigations of the small mammals of the Čergov Mts, 104 ecto - and endoparasites were found in 11 species of hosts: Sorex araneus, S. minutus, S. alpinus, Neomys fodiens, N. anomalus, Muscardinus avellanarius, Apodemus agrarius, A. flavicollis, Clethriomomys glareolus, Pitymys subterraneus, Microtus arvalis. The parasites were distributed among the following higher taxa: Trematoda 4 species, Cestoda 26 spp., Nematoda 20 spp., Acanthocephala 1 sp., Anoplura 4 spp., Siphonaptera 19 spp., Mesostigmata 22 spp., Ixodida 1 sp., Trombidida 7 spp.

Research workers from the Institute of Experimental Biology and Ecology of the Slovak Academy of Sciences, Research Station Staré Hory, and the Department of Zoology of the Hungarian Natural History Museum - Michal AMBROS, Alexander DUDICH, Jan KOVÁČIK, Ferenc MÉSZÁROS, Éva MURAI, Andrej ŠTOLLMANN - carried out ecto- and endoparasitological studies on 382 small mammal specimens belonging to 11 species, collected between August 1980 and April 1982 in the Čergov Mts. Besides this material, some lesser collections have also been analysed, such as fleas from 37 small mammals collected in 4 localities (Čirč, Čirč-Minčol, Ruská Voľa, Lenartov) between 1974 and 1975, and the helminths from 4 small mammal from the vicinity of Križe.

The Čergov Mts are part of the Eastern Beskids in the Outern Western Carpathians (Fig. 1). The ridges of the mountains are 900-1050 m a. s. l., the highest point is Minčol, 1157 m. Average temperature in January is -5°C to -7.2°C, in July 13-16°C. The average annual precipitation is 650-800 mm. The basal rocks of the mountains are flysch, marl and sandstone. As to phytogeography, the range belongs to the district "Beskidium Orientale", according to DOSTÁL (1960). Prevalent plant communities are Fagetum pauper, Abieto-Fagetum, Abietum and Acereto-Fagetum. The forested pastures at higher altitudes are a result of human activity (SOFRON, 1975). Eighty percent of the mountains is wooded.

The localities (at 550 to 1000 m a. s. l.) are as follows:

1) Hertník, 26-28 Aug., 1980. Valley of Hertnický potok stream, beech forest;
2) Lenartov, 10-12 Nov., 1981 and 20-23 April, 1982. Valley of Večný potok stream, beech and fire-beech forest;
3) Livov, 20-23 April, 1982. Valley of Vlčí potok stream, beech and fire-beech forest.

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We studied helminths from 308 small mammal hosts, collected Anoplura, Mesostigmata (Acarina), Ixodida and Trombidida from a total of 382 small mammals, and obtained Siphonaptera from 419 hosts. We found a total of 104 parasite species (4 Trematoda, 26 Cestoda, 20 Nematoda, 1 Acanthocephala, 4 Anoplura, 19 Siphonaptera, 22 Mesostigmata, 1 Ixodida and 7 Trombidida).

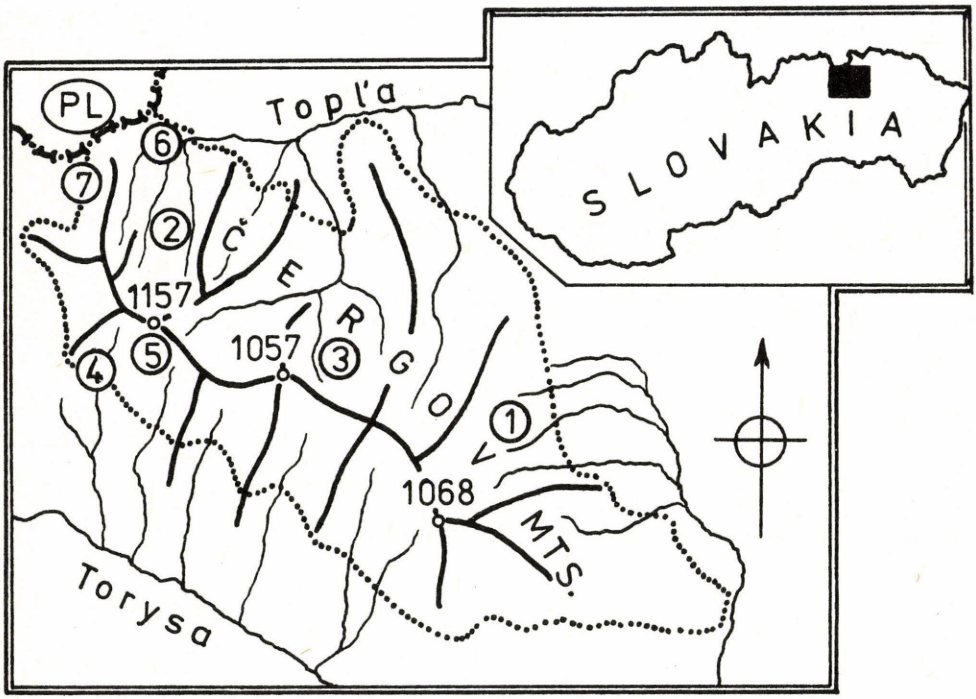

Fig. 1: Map of the Čergov Mts with trapping sites indicated
(1= Hertník, 2= Lenartov Večný potok, 3= Livov Vlčí potok, 4= Čirč, 5= Čirč-Minčol, 6= Lenartov, 7= Ruská Vol'á, 8= Križe)

A list of the parasites for each of the host species is given in the following section. It must be noted that apart from the work of ELTON et al. (1931), there are rather few projects in which the results of both ecto- and endoparasitic investigations are carried out parallely. Therefore it would be inappropriate to directly compare our results with those of other workers.

LIST OF HOSTS AND PARASITES

Sorex araneus Linnaeus, 1758

Trematoda: Rubenstrema exasperatum, Brachylaemus fulvus, Skrjabinophyetus soricis;
Cestoda: Choanotaenia crassiscolex, Hymenolepis furcata, H. spinulosa, H. schaldybini, H. scutigera, H. stefanskii, H. infirma, H. tripartita, Mesocestoides sp. larva;
Nematoda: Parastrongyloides winchesi, Porrocaecum sp. larva, Longistriata depressa, L. pseudodidas, Stammerinema soricis, Capillaria incrassata, C. oesophagicola, Soboliphyme soricis, Angiostrongylidae sp.;
Acanthocephala: Centrorhynchus buteonis juvenile;
Anoplura: Hoplopleura affinis;
Siphonaptera: Hystrichopsylla orientalis orientalis, Ctenophthalmus agyrtes kleinschmidtianus, C. uncinatus uncinatus, Doratopsylla dasycnema cuspis, Palaeopsylla soricis starki, P. steini, Rhadinopsylla integella, Peromyscopsylla bidentata bidentata, Amalaraeus penicilliger kratochvili;
Mesostigmata: Pergamasus brevicornis, Eugamasus lunulatus, Cyrtolaelaps mucronatus, Macrocheles montanus, Laelaps clethrionomydis, Myonyssus ingricus, Eulaelaps stabularis, Haemogamasus hirsutus, Hirstionyssus isabellinus, H. soricis;
Ixodida: Ixodes trianguliceps;
Trombidida: Neotrombicula inopinata, Hirsutiella multisetosa.

Sorex alpinus Schinz,1837

Cestoda: Hymenolepis schaldybini, H. infirma, Mesocestoides sp. larva;
Nematoda: Longistriata depressa, L. pseudodidas;
Acanthocephala: Centrorhynchus buteonis juvenile;
Siphonaptera: Doratopsylla dasycnema cuspis, Palaeopsylla soricis starki, Megabothris turbidus, Ceratophyllus sp.;
Mesostigmata: Laelaps clethrionomydis, Haemogamasus nidi;
Ixodida: Ixodes trianguliceps.

Sorex minutus Linnaeus, 1766

Nematoda: Longistriata pseudodidas, Capillaria kutori;
Mesostigmata: Laelaps clethrionomydis, Laelaps hilaris, Hirstionyssus isabellinus, H. soricis;
Ixodida: Ixodes trianguliceps.

Neomys fodiens (Pennant, 1771)

Trematoda: Maritrema carpathica;
Cestoda: Choanotaenia crassiscolex, Hymenolepis tiara, H. integra, H. omissa, H. bifurca, H. hamanni, H. montana;
Siphonaptera: Ctenophthalmus agyrtes kleinschmidtianus, Palaeopsylla soricis starki, P. steini.

Neomys anomalus Cabrera, 1907

Siphonaptera: Palaeopsylla soricis starki, P. similis similis;
Mesostigmata: Haemogamasus nidi.

Apodemus agrarius (Pallas, 1771)

Siphonaptera: Ctenophthalmus agyrtes kleinschmidtianus, C. uncinatus uncinatus, Megabothris turbidus;
Mesostigmata: Pergamasus crassiceps, Eugamasus kraepelini, Laelaps jettmari, Eulaelaps stabularis, Haemogamasus nidi;
Trombidida: Neotrombicula inopinata, Hirsutiella multisetosa.

Apodemus flavicollis (Melchior, 1834)

Cestoda: Hymenolepis diminuta, Hydatigera taeniaeformis larva;

Nematoda: Heligmosomoides polygyrus polygyrus, Syphacia frederici, Capillaria annulosa;
Anoplura: Hoplopleura edentata, Polyplax serrata;
Siphonaptera: Ctenophthalmus solutus solutus, C. agyrtes kleinschmidtianus, C. uncinatus uncinatus, Amalaraeus penicilliger kratochvili, Megabothris turbidus, Nosopsyllus fasciatus;
Mesostigmata: Pergamasus crassiceps, Eugamasus lunulatus, Macrocheles montanus, Laelaps agilis, L. clethrionomydis, Haemogamasus horridus;
Ixodida: Ixodes trianguliceps.

Clethrionomys glareolus (Schreber, 1780)

Cestoda: Hymenolepis horrida, Catenotaenia cricetorum, Paranoplocephala sp. 1, Mesocestoides sp. larva, Taenia tenuicollis larva, Taenia martis larva;
Nematoda: Heligmosomoides glareoli, Heligmosomum mixtum, Boreostrongylus minutus, Capillaria annulosa;
Anoplura: Hoplopleura acanthopus, H. edentula;
Siphonaptera: Atyphloceras nuperus, Ctenophthalmus agyrtes kleinschmidtianus, C. obtusus, C. uncinatus uncinatus, Rhadinopsylla pentacantha, R. integella, Peromyscopsylla bidentata bidentata, Amalaerus penicilliger kratochvili, A. arvicolae, Megabothris turbidus;
Mesostigmata: Pergamasus crassiceps, Eugamasus lunulatus, E. kraepelini, Eugamasus sp., Euryparasitus emarginatus, Cyrtolaelaps mucronatus, Macrocheles montanus, Laelaps agilis, L. clethrionomydis, L. hilaris, Hyperlaelaps microti, Eulaelaps stabularis, Haemogamasus horridus, H. nidi, H. hirsutosimilis, Hirstionyssus isabellinus;
Ixodida: Ixodes trianguliceps;
Trombidida: Neotrombicula autumnalis, N. inopinata, N. talmiensis, N. elegans, Hirsutiella multisetosa, Leptotrombidium europaeum, L. silvaticum.

Pitymys subterraneus (de Sélys-Longchamps, 1835)

Cestoda: Hymenolepis horrida, H. asymmetrica, Anoplocephaloides dentata, Paranoplocephala sp. 2, Hydatigera taeniaeformis larva, Taenia tenuicollis larva, Tetratirotaenia polyacantha larva;
Nematoda: Heligmosomum costellatum, Boreostrongylus minutus, Syphacia montana;
Anoplura: Hoplopleura acanthopus, H. edentula;
Siphonaptera: Hystrichopsylla orientalis orientalis, Atyphloceras nuperus, Ctenophthalmus agyrtes kleinschmidtianus, C. obtusus, C. uncinatus uncinatus, Rhadinopsylla pentacantha, R. aff. isacantha, R. integella, Peromyscopsylla bidentata bidentata, Amalaraeus penicilliger kratochvili, A. arvicolae, Megabothris turbidus;
Mesostigmata: Pergamasus brevicornis, Eugamasus lunulatus, E. kraepelini, Euryparasitus emarginatus, Cyrtolaelaps mucronatus, C. minor, Laelaps jettmari, L. clethrionomydis, L. hilaris, Eulaelaps stabularis, Haemogamasus nidi, H. hirsutosimilis, Hirstionyssus isabellinus;
Ixodida: Ixodes trianguliceps;
Trombidida: Neotrombicula inopinata, N. elegans, Hirsutiella multisetosa, Leptotrombidium silvaticum.

Microtus arvalis (Pallas, 1779)

Cestoda: Anoplocephaloides dentata;
Nematoda: Heligmosomum costellatum, Boreostrongylus minutus, Syphacia nigeriana;
Anoplura: Hoplopleura acanthopus;
Siphonaptera: Ctenophthalmus agyrtes kleinschmidtianus, C. uncinatus uncinatus, Amalaraeus penicilliger kratochvili, A. arvicolae;
Mesostigmata: Laelaps celthrionomydis, L. hilaris, Hyperlaelaps microti, Haemogamasus nidi;
Trombidida: Hirsutiella multisetosa.

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